COMMERCIAL
WATER FILTER

INSTALLATION
&
OPERATING
INSTRUCTIONS

Model : **AFB24-180**

Serial No : ……

Manufacturer and Supplier of

FILTRATION & WATER TREATMENT PRODUCTS
for commercial, industrial and residential application

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OPERATING PRINCIPLE

Iron Removal - Birm
Iron is removed by catalytic oxidation and filtration in the media bed, both soluble and Insoluble iron is removed in one operation under most conditions.

The unit normally only requires Backwashing periodically to restore the filter bed. Chemical regeneration is not normally required

Operating Parameters

Water Temperature	5ºC - 48ºC
Water pH	6.8 - 8.5
Water Pressure	280 - 690 kPa
Oil & Hydrogen Sulphide	To be absent
Colloidal Iron	To be absent
Suspended Solids	5 mg/l
Alkalinity	4 mg/l for each 1mg/l of Iron and/or manganese

Max. 4-5 mg/l organic matter as indicated by dissolved oxygen consumed value.
15% dissolved oxygen of iron level

NOTE: If fitted with a micronizer to induce oxygen into the water prior to the filter - install the micronizer on a valved by-pass as indicated in figure 4.

AF SERIES FILTERS

Table 2

TYPE	MODEL	CONTINUOS FLOW RATE L.P.M	PEAK FLOW RATE L.P.M	BACKWASH FLOW RATE L.P.M	VALVE	APPROX. WEIGHT KG
Multi- Media	AFB 24-180	57	87	114	180	338

Valve	180	Operating Pressure: 280 - 690 kPa Temperature: 5°C - 48°C Electrical: 240V 50Hz 3 watts maximum Warning: A pressure reduction valve should be installed if water hammer prevails. Table at left shows recommended MINIMUM plumbing sizes. FAILURE TO OBSERVE WARNING WILL VOID WARRANTY
Inlet (mm)	40	
Outlet (mm)	40	
Drain (mm)	40	

INSTALLATION

Check the equipment upon arrival for damage or shortages and report same to our Office or Agent before commencing installation.

Locate the unit on a clean, firm, level foundation, preferably concrete, with sufficient space for operation and maintenance. Level with shims if necessary. Position the tank in the correct position before loading the Media. The filter should be fitted with inlet and outlet pressure gauges to monitor the pressure loss through the filter. It is recommended that the filter be backwashed when the pressure differential increases by 35 kPa.

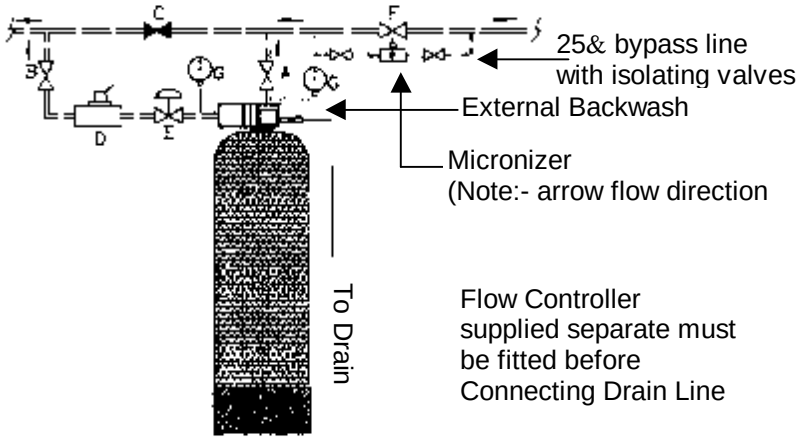
The control system is sometimes shipped as a sub-assembly to avoid damage in transit. The water filter should be assembled, piped and wired according to the following recommendations. The following instructions are provided as a general guide. The filter requires a 10amp 240 volt GPO. The filter installation must be protected from the elements

FIG.4 - INSTALLATION -- SINGLE TANK BIRM IRON REMOVAL FILTER INSTALLATION

* Pipework Layout - suggestive only
* Unit only supplied
* Pipe, Valves, Solenoids, Water Meter supplied by others

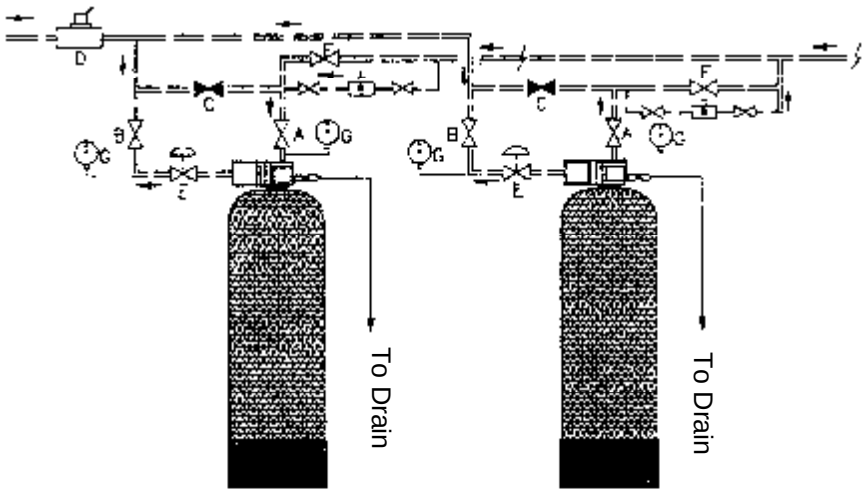
All pipework connections to be flanged or barrel union, for ease of removal and maintenance.

* USE PIPEWORK SIZES SHOWN IN PERFORMANCE DATA TABLE 2



A = Inlet Isolating Valve -- Manual
B = Outlet Isolating Valve -- Manual
C = Bypass Valve -- Manual - optional
D = Water Meter - optional, fit only where metering of supply is required
E = Solenoid Valve - optional, fit only where raw water to service is not required during REGENERATION. Valve must be 240V. 50Hz operation normally open and equal to pipeline size - connect to terminals 2 and 5 inside valve cover (Refer Fig.17)
F = Inlet Air Regulating Valve -- Manual
G = Inlet / Outlet Pressure Gauges

FIG.5 - INSTALLATION -- MULTIPLE UNITS



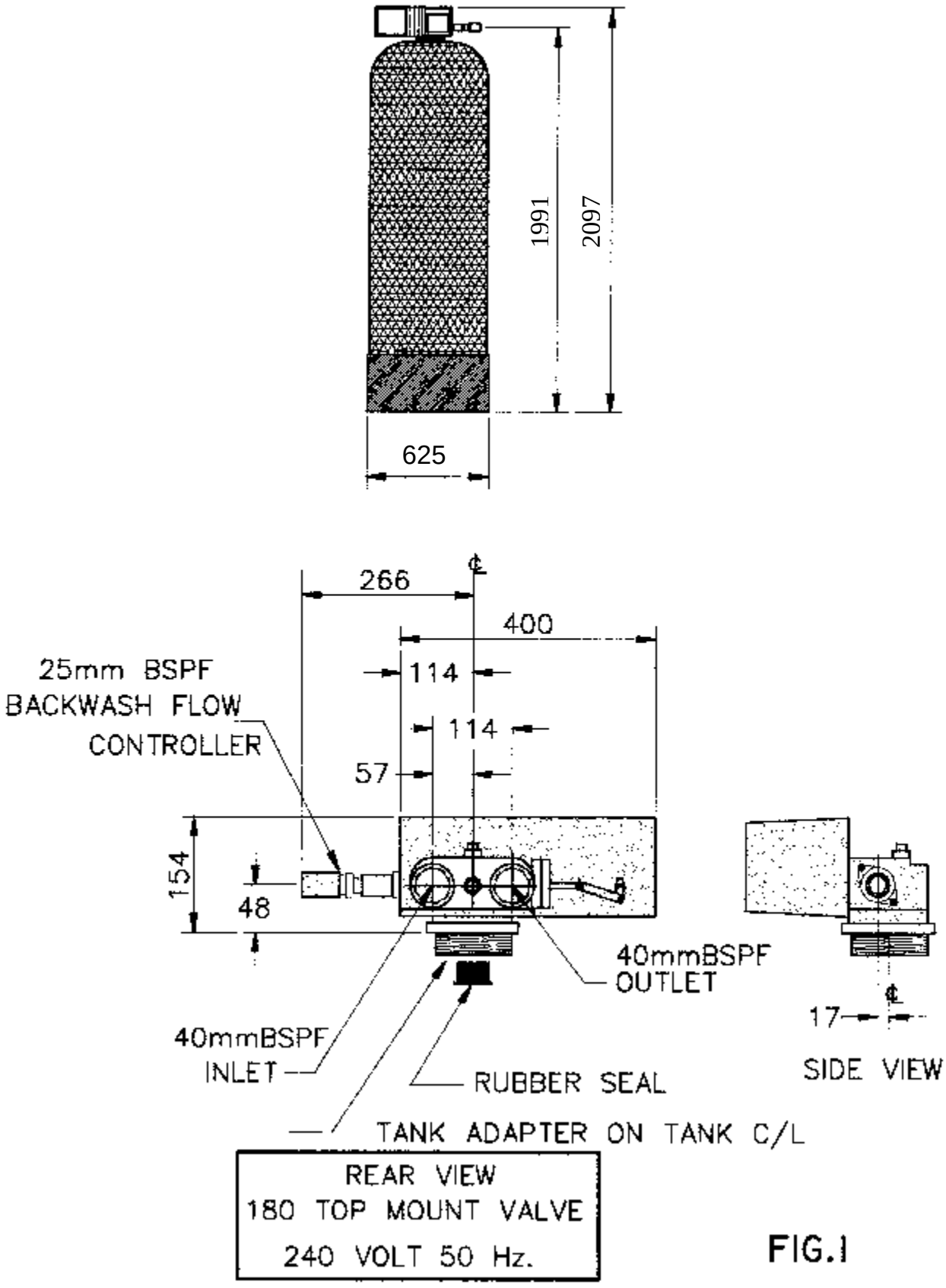

1991
2097
625
266
400
114
114
57
25mm BSPF
BACKWASH FLOW
CONTROLLER
154
48
40mmBSPF
OUTLET
40mmBSPF
INLET
RUBBER SEAL
TANK ADAPTER ON TANK C/L
17
SIDE VIEW
REAR VIEW
180 TOP MOUNT VALVE
240 VOLT 50 Hz.

FIG.1

MEDIA INSTALLATION

Step 1: Remove the tank and riser tube assembly from the carton and make sure the softener tank is empty and clean.

Step 2: Cover the distributor pipe with a clean rag or plastic so that NO gravel or media enters the distributor pipe.

Step 3: Load the media - Refer Media Placement instructions.

a) Pour in the underbed gravel (No.6). Refer Table 1. 80kg.

b) Level out the underbed gravel using a broom handle/PVC pipe. The underbed gravel should cover the bottom distributor by about 25mm.
CAUTION:
Do not raise the distributor pipe. If gravel is allowed to get under the distributor, empty and start again.

b) After loading and levelling the No. 6 Gravel underbed, half fill the tank with water and add the Birm (Refer Table 1. 126kg.)
¬ **Slowly fill the tank**.

Step 4: To obtain optimum performance from your unit, exercise particular care in ensuring that each grade of media is levelled evenly over the previous layer.

Step 5: Fill the tank with water to 50mm from the top.

Step 6: Clean top of tank (neck & threads) of all traces of media. Remove the rag or plastic fitted in Step 2, taking care not to raise the riser pipe.

Step 7: Unpack the valve, remove the cap screws and separate the adaptor. Store gasket safely. Check that the tank 'O' ring seal is in place. Remove the rubber sleeve and, using a little silicone "O" ring lubricant, lubricate the inside surface only. **Place rubber sleeve into tank adaptor**. *Refer Fig. 1.*

Step 8: Fit the adaptor to the tank, carefully, to allow the riser pipe to locate centrally. Screw down firmly by hand. Do not over tighten. Place the gasket on the tank adaptor, fit the valve body with cap screws provided. Tighten cap screws evenly. *Refer valve assembly Page 6.*

COMMISSIONING

Step 1: Check plug is dry first, then connect lead into power outlet, switch on.

Step 2: Remove clear cover from timer face by pulling the two black lock pins outward. Depress the red knob *(Fig. 14)* and rotate anti-clockwise to backwash position, release red knob, wait for valve drive to index to backwash position, (if not already in this position) spindle fully out. *(Fig.11).*

Step 3: Just open inlet isolating valve approximately 1.1/2 turns. Allow unit to fill slowly (water will issue to drain) continue to run until the unit automatically indexes to Pause position which may take up to 20 minutes. All air must be removed.

Step 4: Depress the red knob and turn anti-clockwise until the microswitch trips into the fast rinse position. Allow the valve to move fully into this position *ie. Fig. 13*. Further rotate the red knob anti-clockwise so that the arrow tip is pointing at about a seven o'clock position. Then allow the red knob to advance electrically around to the Service position. This may take up to 10 minutes.

Step 5: Depress the red knob and turn anti-clockwise to start, release, the unit will now go through each cycle - Backwash, purge and back to service automatically.

NOTE: A small amount of media may pass to drain during the initial backwash, this is considered normal.

Step 6: Check with site supervisor that unit can go on line. If so - slowly open outlet isolating valve fully, check that manual bypass valve is fully closed. This unit is now on line.

Step 7: Check for and report any leaks.

Step 8: Set the backwash frequency to Tuesday, and Saturday for Carbon Filter if frequency of backwash has not already been calculated. To set, PUSH the skipper pins IN on the skipper wheel on days Backwashing is required.

Note: This is only a guide for initial setting and should be altered to suit each individual installation in accordance with load conditions.

Turn the dial to the correct day of the week on which you are setting the dial. Now depress the pins for the desired day/s for backwash required.

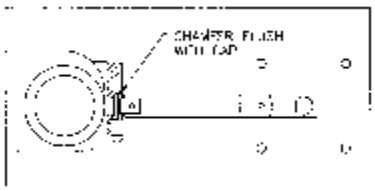
Step 9: Set time of day, pull timer knob (Fig. 14) and set arrow to the time of day (time of your watch) release, make sure that the knob has re-engaged gear, knob right in. Backwash will take place at approximately 2 am. If this time is not convenient it will be necessary to offset the time of day setting to make allowance for the desired time of backwashing. eg. if 4 am is desired, it will be necessary to set the time of day two hours earlier than actual time.

Step 10: Replace the timer cover, depress the lock pins, and wipe over unit.

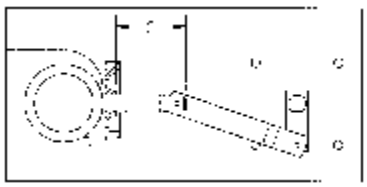
Step 11: Check that the micronizer is injecting oxygen into the feed stream - check that the side valve gate is screwed all the way in and that the vacuum is occurring at the barbed fitting. To do this place a finger over the open end of the fitting and check for vacuum effect. If a vacuum can not be felt it will be necessary to restrict the main inlet valve to the filter so as to force more flow through the micronizer. Make sure the micronizer bypass loop valve is fully open.

Step 12: Do final check for leaks etc. Ensure instruction book is kept with relevant personnel. Run the unit and check the water quality produced.

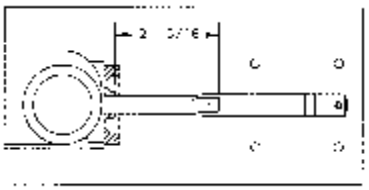
DRIVE PISTON POSITIONING



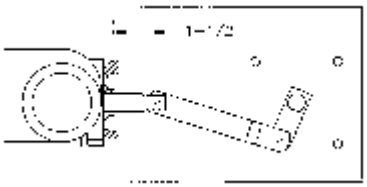
(1) SERVICE POSITION



(3) BRINE AND SLOW RINSE POSITION



(2) BACKWASH POSITION



(4) FAST RINSE POSITION

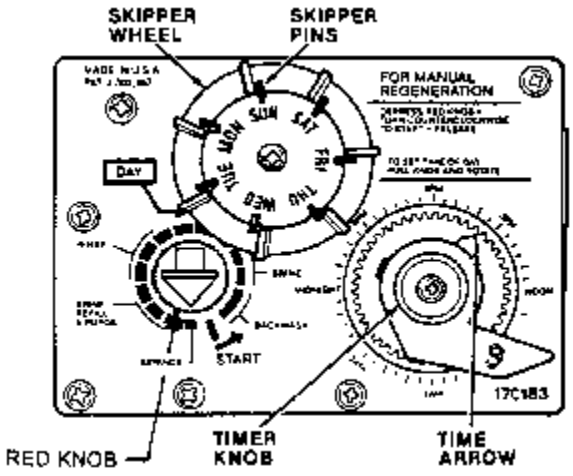


FIG. 14

SET TIMER

Determine a regeneration schedule for the conditioner and adjust the automatic timer as follows:

1. Pull all SKIPPER PINS out (away from control).
2. Rotate SKIPPER WHEEL until DAY ARROW points to day of week or number 1.
3. Depress SKIPPER PIN(S) for day(s) regeneration is required.
4. Pull TIMER KNOB out (away from timer face) and rotate until BLACK ARROW on tripper arm points to correct time of day on Face Plate.
5. Timer will automatically initiate regeneration on preset days at 2:30AM. To alter time, simply reset TIMER KNOB to an earlier or later time, which will change the time of regeneration by the same number of hours. (Time indicated as BLACK ARROW will no longer be correct).

MANUAL OPERATION

Step 1. START-UP OR INSPECTION REGENERATION

a) Push in RED KNOB and turn counterclockwise past START to BACKWASH. Disconnect electrical power and leave in position for desired time. Reconnect electrical power.
b) Push in RED KNOB and repeat for all desired cycles

Step 2. MANUAL INITIATION OF REGENERATION

a) Reconnect electrical power.

b) Push in RED KNOB and turn counterclockwise to the START position. Release. Unit will then go through a complete regeneration as programmed.

BACKWASH CYCLE TIME INSTRUCTIONS

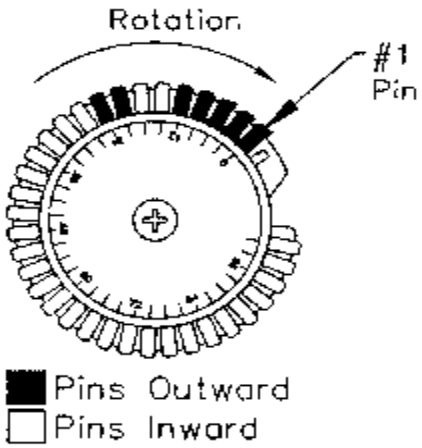
PIN TIME CHART

BACKWASH OR FAST RINSE		PAUSE	
NO. OF PINS OUT	TIME	NO. OF PINS IN	TIME
1	8min.	2	1.5 min.
2	11 min.	3	4.5 min.
3	14 min.	4	7.5 min.
4	17 min.	5	10.5 min.
5	20 min.	6	13.5 min.
6	23 min.	7	16.5 min.
7	26 min.	8	19.5 min.
8	29 min.	9	22.5 min.
9	32 min.	10	25.5 min.
10	35 min.	11	28.5 min.
11	38 min.	12	31.5 min.
12	41 min.	13	34.5 min.
13	44 min.	14	37.5 min.
14	47 min.	15	40.5 min.
15	50 min.	16	43.5 min.

 Each additional pin either pulled out or pushed in equals 3 minutes

TYPICAL FILTER APPLICATION CYCLE

Backwash …….. 20 min. - 5 pins outward
Pause …… 1.5 min. - 2 pins inward
Fast Rinse …….. 11 min. - 2 pins outward



SET BACKWASH TIMING

Pull pins as shown for backwash time desired - see chart.

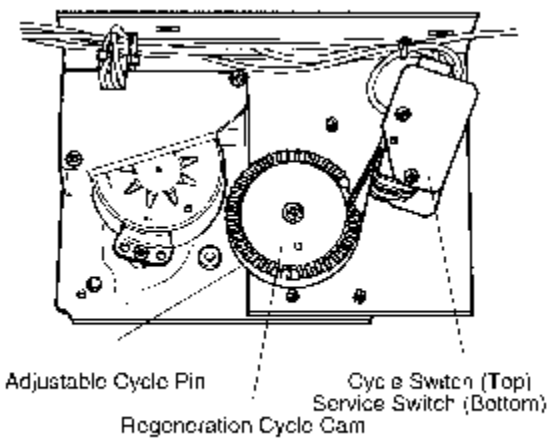
SET PAUSE TIMING

Depress pins as shown for desired brine/rinse time - see chart. (Minimum of two pins down)

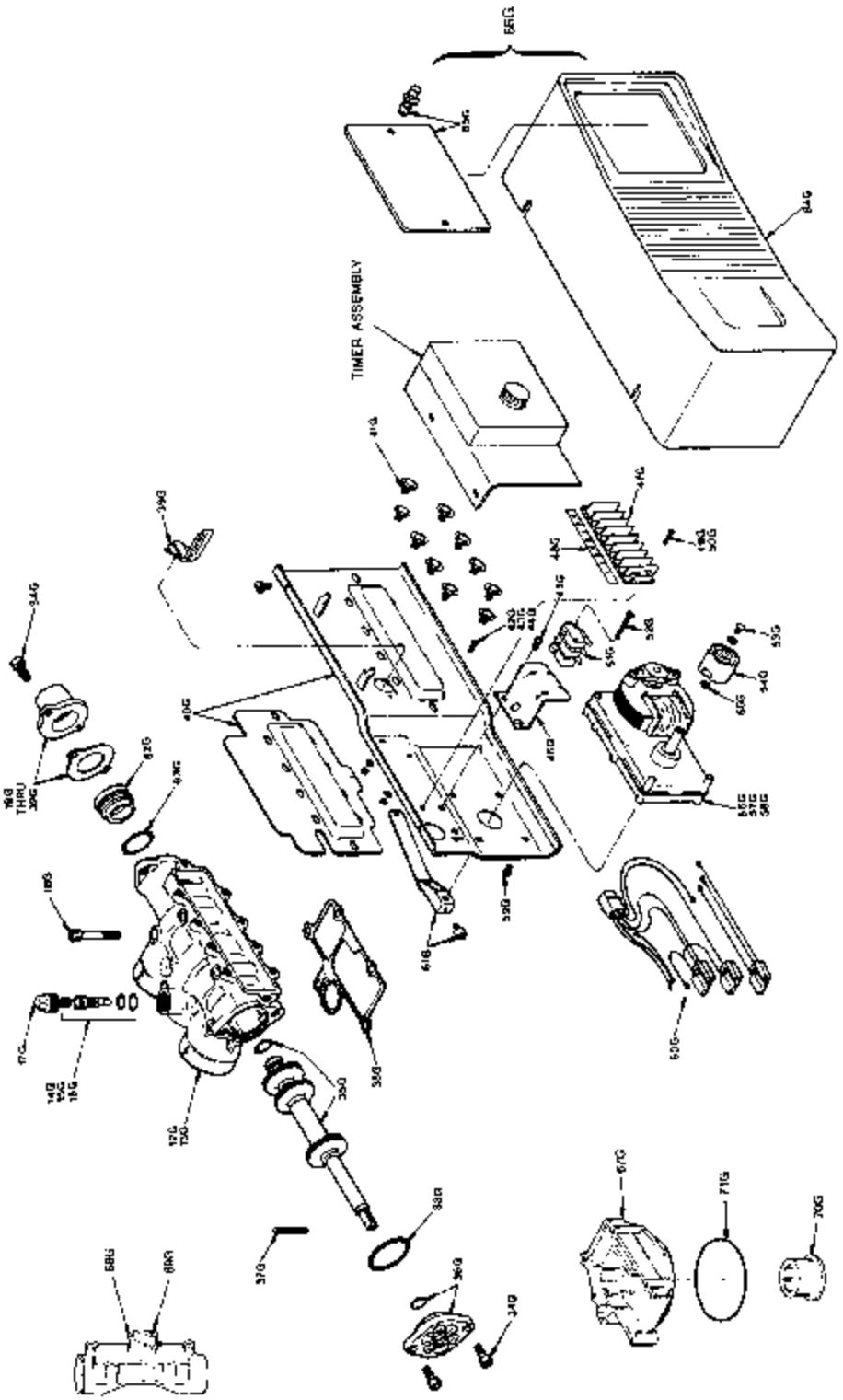
SET FAST RINSE TIMING

Pull pins as shown for desired fast rinse time - see chart

TIMER (REAR VIEW)



REPLACEMENT PARTS



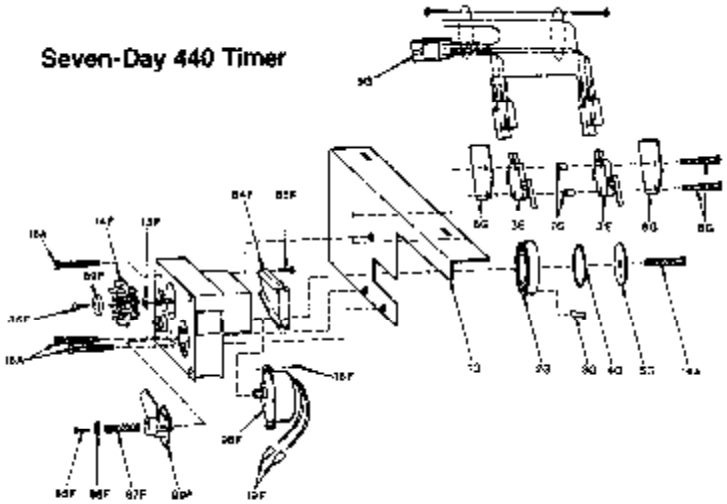
Valve Assembly

VALVE ASSEMBLY PARTS LIST

Item	Description	No. Required	Item	Description	No. Required
12G	Valve Body NPT	1	49G	Screw	2
13G	Valve Body BSPP	1	50G	Nut	2
14G	Injector Assy. small	1	51G	Limit Switch	3
15G	Injector Assy. Med	1	52G	Machine Screw	2
16G	Injector Assy. Large	1	53G	Cam Screw	1
17G	1/2" Brass Pipe Plug	1	54G	Cam	1
18G	Cap Screw	5	55G	Lock Washer	2
32G	Backwash Assy. BSPP	1	56G	Drive Motor, 100v-120v, 50Hz/60Hz	1
33G	O Ring	1			
34G	Cap Screw	4	57G	Drive Motor, 240v 50Hz	1
35G	Piston Assy.	1	58G	Drive Motor, 240v 50Hz/60Hz	1
36G	Lower Cap Assy.	1	59G	Motor Screws	4
37G	Cotter Pin	1	60G	Wiring Harness	1
38G	Manifold Gasket	1	61G	Drive Link Assy.	1
39G	Timer Lock	1	62G	Drain Shut-off Valve	1
40G	Motor Plate Assy.	1	63G	O Ring	1
41G	Hex Head Screw	10	64G	Cover	1
42G	Ground Screw	1	65G	Window Cover w/- Fasteners	1
43G	Lock Washer	1	66G	Cover Window Cover w/- Fasteners	1
44G	Nut	1	67G	Top Mount Adaptor - O Ring	1
45G	Screw	2	68G	Side Mount Adaptor (NPT)	1
46G	Switch Bracket	1	69G	Side Mount Adaptor (BSPP)	1
47G	Terminal Strip	1	70G	Distributor Seal	1
48G	Marker Strip	1	71G	O Ring	1

SEVEN DAY 440 TIMER LIST OF PARTS

Item	Description	No. Required	Item	Description	No. Required
14A	Cam Screw	1	89F	Day Dial Washer	1
16A	Timer Mounting Screw	3	99F4	7 Day Tripper Assy.	1
3E	Limit Switch	2	1G	Timer Bracket	1
14F7	Skipper Wheel - 7 Day	1	2G	Adjustable Cam	1
15F	Friction Washer	1	3G	Timing Pin	36
18F	Motor Mounting Screw	2	4G	O Ring	1
19F	Wire Nut	2	5G	Retaining Washer	1
84F	Cover Plate	1	6G	Switch Insulator	2
85F	Screw	4	7G	Switch Spacer	2
87F	Compression Spring	1	8G	Switch Mounting Screw	2
88F	Gear Retainer	1	9G	Wiring Harness	1



WIRING DIAGRAM - 440
SIX-DAY OR SEVEN-DAY TIMER

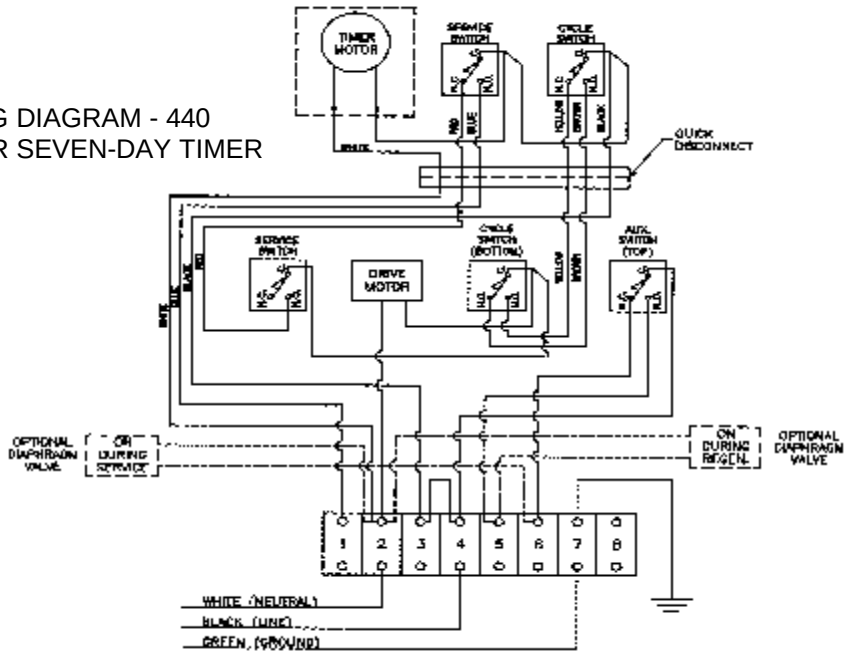


FIG. 17

MODEL 180 VALVE CAM POSITION
GENERAL MAINTENANCE

For correct operation the cam should be set to stop, the position at the point of each function. This is done at the factory and rotation checked at this time. However, resetting may be necessary from time to time should the unit fail to draw brine. Setting is simple, index position to service position, (fully in), switch off power, loosen screw "A", adjust cam to position shown above. Switch on power.

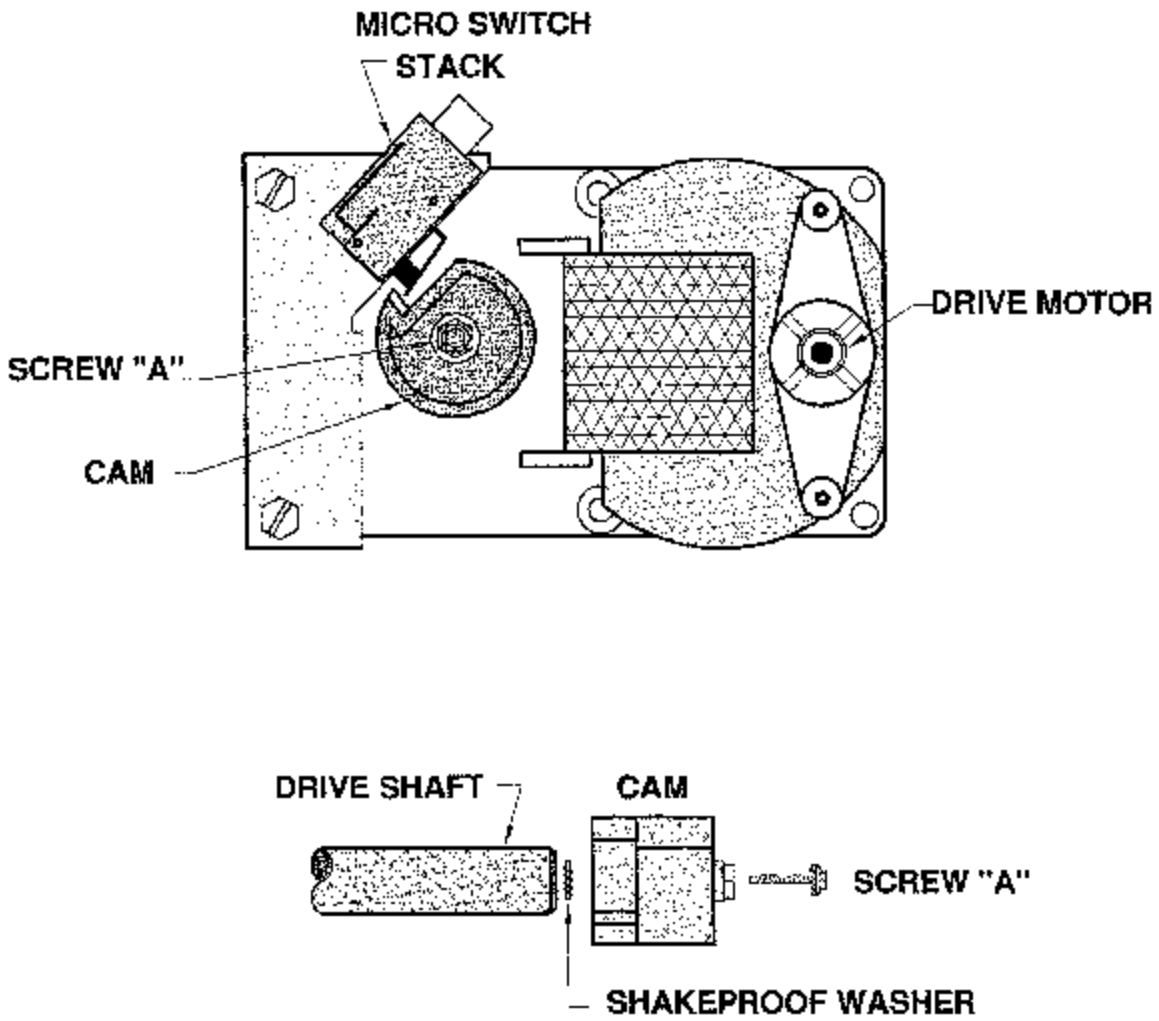


FIG. 19

WATERITE MICRONIZER

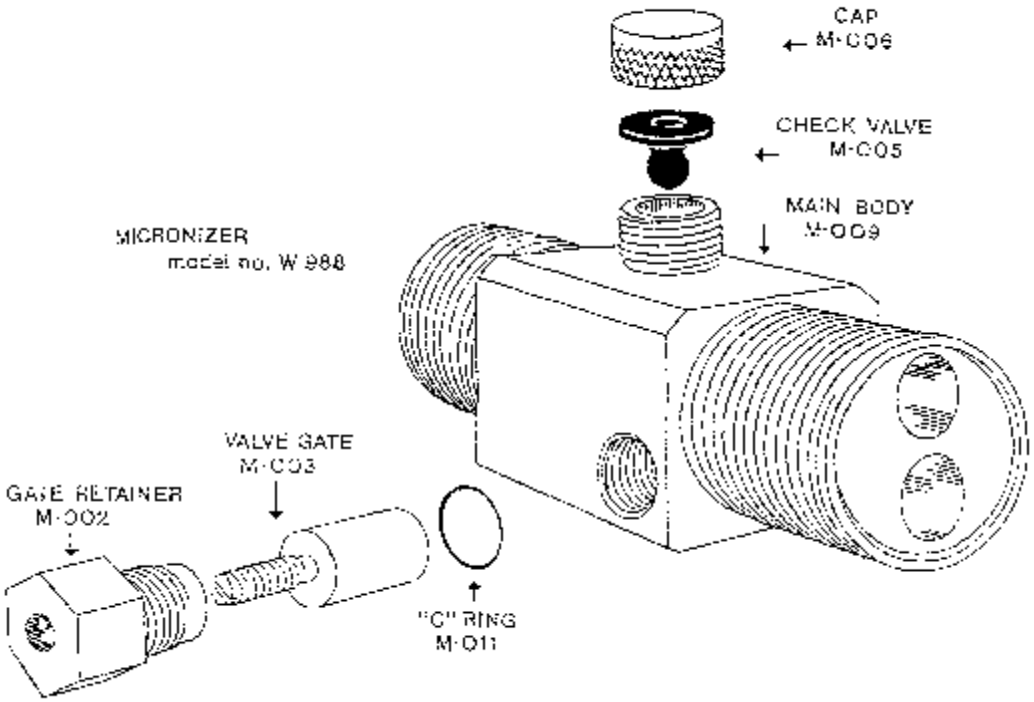
HOW TO INSTALL REPLACEMENT PARTS:
The Waterite micronizer consists of high impact ABS plastic body containing two water passages. The water passages closest to the check valve (M-005) contain built-in convergent and divergent cones forming a venturi. The venturi causes air to be drawn into the water stream when water is flowing. The second water passage acts as a by-pass. The percentage of water flow allowed through the by-pass is regulated by the valve gate (M-003)/ gate retainer (M-002) assembly. This in turn regulates the amount of air drawn into the water stream through the venturi. Turning the valve gate screw clockwise into the by-pass serves to restrict water flow in the by-pass and at the same time force more water through the venturi passage. This in turn causes more air to be drawn into the water stream.

In the event that parts must be replaced, this can be accomplished by following a few simple instructions:

1. To replace the rubber check valve (M-005), wet the check valve with water or silicone oil and install it in the main body. Thread the cap down snugly by hand. Do not over tighten. Failure to lubricate the rubber properly will cause the valve to twist inside the cap and will result in leakage of water through the valve. If this should occur, remove the valve, re-lubricate, and re-install it.

2. To replace the "O" ring or valve gate/gate retainer assembly, start by wetting the rubber "O" ring with water or a silicone oil. Carefully insert the "O" ring into its seat in the bottom of the hole in the main body. Thread the valve gate fully into the gate retainer. Thread the gate retainer into the main body by hand to a snug fit. With use of a suitable tool (wrench or pliers), turn the gate retainer another 1/4 turn into the main body. Do not over tighten.

   NOTE: To prevent leakage through the 1" NPT threads, use teflon tape during assembly. Care should be taken when wrapping the tape over the threads to ensure that no tape enters the micronizer and clogs the venturi.



MEDIA PLEACEMENT

BIRM FILTER

Table 1

Sequence in Tank	AFB24
1 st (in bottom of tank)	80kg #6 gravel (4 x 20kg)
2 nd	*126kg Birm (7 x 18kg)

TROUBLE SHOOTING

GUIDE

AFB20-180

Birm Filter

PROBLEM	REF. PAGE
UNIT WILL NOT BACKWASH AUTOMATICALLY	Page Seventeen
UNFILTERED WATER TO SERVICE	Page Seventeen
LEAK TO DRAIN	Page Eighteen
INSUFFICIENT SERVICE FLOW RATE	Page Eighteen

1. Unit will not Backwash Automatically

A) **IS THERE POWER TO THE UNIT ?**
B) **IS THE POWER CORD PLUGGED IN ?**
C) **IS THERE A REMOTE SWITCH IN THE LINE ISOLATED ?**
- check these possibilities, and correct if necessary

D) **IS THE TIMER MOTOR RUNNING**
- if the timer motor is running, the small driven gear on the timer motor will be turning. If not, replace the timer motor.

E) **BACKWASH DRIVE GEAR NOT ENGAGED**
- check gear behind push button on timer for proper alignment, and time of day lever is down and fully engaged.

F) **VALVE MOTOR MICRO SWITCH NOT OPENING OR CLOSING**
- adjust micro switch stack (Fig. 19)

G) **VALVE MOTOR MICRO SWITCH BURNED OUT**
- replace micro switch

H) **VALVE MOTOR MICRO SWITCH NOT OPENING OR CLOSING**
- replace micro switch

I) **TIMER MOTOR SWITCH BURNED OUT**
- replace micro switch

2. Unfiltered Water to Service

A) **RUBBER SLEEVE MISALIGNED OR MISSING AT TOP OF DISTRIBUTOR PIPE**
- remove valve head and replace rubber sleeve

B) **UNIT INSTALLED BACKWARD**
- check arrow markings on top of valve head for correct inlet/outlet plumbing

C) **REFER SECTION 1 FOR FURTHER INFORMATION**

3. Leak to Drain

A) **CHECK PLUNGER POSITIONING**

- refer Fig. 12

B) **CHECK DRAIN SHUT-OFF 'O' RING**

- located in upper cap (refer Part No. 35G)

4. Insufficient Service Flow Rate

A) **UNIT MAY BE FOULED WITH SUSPENDED SOLIDS**

- backwash and check again

B) **SERVICE INLET OR OUTLET VALVE NOT FULLY OPENED**

- ensure they are opened

C) **PISTON OUT OF POSITION**

- reposition (refer Fig.12)